

PROSPECTING IN BRITISH COLUMBIA.

A PAPER READ BEFORE
THE INSTITUTION OF MINING ENGINEERS.

BY

WM. M. BREWER,
in
VICTORIA, BRITISH COLUMBIA.

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PROSPECTING IN BRITISH COLUMBIA.

By WM. M. BREWER, VICTORIA, BRITISH COLUMBIA.

During the past spring and summer, the writer has been engaged in prospecting and exploring some sections of British Columbia, of which but little has been known up to the present time. Although it is true that the Fraser river placer-diggings were worked as early as about 1856 by miners who came from California, yet it is also true that no attention had been paid to quartz-mining in the country drained by this river and its tributaries until within the past few years. Even to-day, so extensive is the territory lying between the line of the Canadian Pacific railway and the northern boundary of the province, that except along a few streams, no prospecting has been done.

But before commencing a description of the territory visited by the writer, a few suggestions of a practical nature relative to outfits and mode of travelling may not be out of place. One important feature in this connexion to which due consideration should be given is the fact that nature has so distributed the waterways that in the past most of the travelling has been by canoe. Except in the vicinity of towns, there are no waggon-roads, and often no trails. Those which do exist were built for the convenience of the Cariboo miners many years ago, and have been kept up because several mining-camps of importance are located on the route north from Ashcroft on the Canadian Pacific railway to Barkerville, in the centre of the Cariboo district. This stage road is about 300 miles long, and trails branch off from it in many directions to the camps occupied nowadays either by mining companies engaged in hydraulicking or by placer-miners.

When this condition is given due consideration, unless the prospector proposes to follow the beaten track along the highway just referred to, it can be readily seen that he must be prepared to rough it in every sense of the word. If he really desires to explore virgin territory he will do well to carry as light an outfit as possible, and hire *Siwash*es, as the Indians are called, either to transport him and his outfit by canoe along the lakes and streams, or to pack the outfit while he walks through passes and across the mountains to explore the country drained by these watercourses.

Pack-animals are of little service, for two reasons :—(1) the scarcity of feed, except in a few localities ; and (2) their inability to travel except along beaten trails.

Another advantage in hiring Indians is the fact that not only do they know the country thoroughly, but very many of them, as the writer has discovered, have very good notions of the character of the rock, and during their hunting-trips locate leads and ledges of mineral bearing quartz. To these they will often guide white men who hire them, without demanding any additional remuneration. As a matter of fact, all the high-grade quartz which has been found in this territory, north of the railway, was originally discovered by Indians or half-breeds.

The Hudson Bay Company, several years ago, originated the "Chinook jargon" in order that all the northern Indians might speak one language, which the whites could readily learn. The original languages used by the different tribes vary so much that to-day the Douglas tribe, inhabiting the country along the Lillooet river, cannot understand the Chilcotins who live only a comparatively short distance north, or the Squamish tribe living on the coast at the head of Howe sound, and *vice versa*. But all can use "Chinook" and consequently understand each other. Dictionaries of this language can be purchased at nearly any book-store in the province, and a white-man can familiarize himself with it in a few weeks sufficiently to converse with any of those Indians.

In dealing with them it is requisite to exercise tact and diplomacy, or one will be most unmercifully cheated and imposed upon. One also should be a good judge of character, so as to be able to select good Indians from bad ones, and it will then be found that the best are none too good or reliable.

There is one good trait possessed by the Douglas Indians at least, that is honesty. It is due to the just and impartial administration of good laws made for the treatment of the Indians by the Dominion government that to-day they are self-supporting, fairly industrious, and, as a rule, reliable. Therefore, the explorer or prospector need have no hesitation about hiring them for guides. They are also expert canoemen and know the waters of their territory thoroughly, which is very essential, because all the rivers are so full of rapids that the average white man would soon come to grief if he attempted canoe-trips alone.

Only recently, the writer drifted down 30 miles of the Upper Lillooet river in 3½ hours. The trip up the same distance occupied 3 days, and required the utmost efforts of two Indians with the assistance at times of three white men.

The territory which the writer proposes to discuss in this paper is that drained by the Upper Lillooet river, and also that lying north of that river towards Bridge river. According to the published maps of the province, the Upper Lillooet river is a small insignificant stream. In reality, it is about 50 miles in length below the forks, but thence up stream the writer could gain no reliable information as to the length of each fork. Owing to the high water and swift current, he was only able during a recent trip to reach a point about 30 miles above the mouth. Later in the season though, when the water falls to its normal level, he purposes making another effort to reach some hot springs which the Indians report as occurring about 4 miles above the forks, and on the southern prong.

There are four routes which reach the section dealt with in this paper:—(1) That travelled by the writer leaves the Canadian Pacific railway at Agassiz station, 65 miles east of Vancouver, thence by stage to the Harrison hot-springs, at the foot of Harrison lake; up the lake to its head at the mouth of the Lillooet river by steamer, a distance of about 50 miles; thence 30 miles by waggon-road up the river to the foot of Tennasse lake; and up this lake to its head, a distance of 6 miles by canoe. There the river, very swift and comparatively narrow, is encountered again, and the traveller takes the trail-portage for 2 miles to the foot of Lillooet lake; up that by canoe, a distance of 24 miles, to the mouth of the Upper Lillooet river to the Pemberton Meadows, the name given to the river-valley, because of its extent and the abundant growth of natural grasses. A pony-trail has been cut around both of these lakes, so that the entire trip can be made from the head of Harrison lake by land, but the canoe is much more comfortable, especially when an outfit is being taken, because the trail is rarely used for packing, being rough, rocky and mountainous.

(2) This route leaves the Canadian Pacific railway at Lytton station, at the confluence of the Thompson and Fraser rivers; thence by stage to Lillooet, 40 miles distant on the Fraser river; thence by canoe up Seton lake, 18 miles long; then across a portage, $1\frac{1}{2}$ miles to the foot of Anderson lake, 16 miles in length, up this by canoe to its head; thence by trail 24 miles, through the Pemberton portage to the Indian village at the Meadows, 4 miles above the mouth of the Upper Lillooet river. A good pony-trail has been cut around the northern shores of these lakes, over which loaded pack-animals can be taken with safety.

(3) The third route leaves the Canadian Pacific railway at Ashcroft station, 203 miles east of Vancouver; thence by stage to Lillooet, and from there *via* Seton and Anderson lakes, by the same route as the second route.

(4) This route leaves Vancouver by steamer or other craft, thence about 30 miles up the coast to the head of Howe sound; from this point a trail was cut several years ago, north-easterly, to the Pemberton Meadows, which it enters about 9 miles above the mouth of the Upper Lillooet river. The distance from Vancouver by this route is, the writer is reliably informed, less than 100 miles. In summer time, there is ample feed for pack- or saddle-horses, but during recent years this route has been travelled but little, even by the Indians.

As early as 1858, the British Columbian Government, then a crown colony, opened both the routes *via* Harrison lake and the Anderson and Seton lakes, for the convenience of the placer-miners going into the Cariboo district. These pioneers, who were unable to navigate the Fraser river for any great distance from the coast because of its rapids, were transported by steamer or other craft up that river as far as the mouth of the Harrison river, and during high water up that river to Harrison lake; or during low water they left the Fraser river and crossed by waggon-road to the foot of the lake. The town of Port Douglas was established at the head of Harrison lake in 1857, and flourished as a typical mining-camp until about 1874. To-day, one white man and a number of Douglas Indians are the only residents of this once important starting-point to the rich placer-diggings of the Upper Fraser and Quesnelle rivers.

From Port Douglas, the route travelled by the old-time miners was up the first route to Pemberton Meadows, thence down the Pemberton portage, Anderson and Seton lakes to Lillooet, and from that point they scattered along the Fraser river. Below the town, some of the richest placer-diggings ever worked in British Columbia were discovered more than 40 years ago.

It is not the purpose of the writer of this paper to discuss the past history of this section of the province, but he has thus briefly described the routes into the Upper Lillooet district in order that more intelligent ideas can be formed by the reader as to the geographical position of the territory.

The prevailing rock on both sides of the Lower and Upper Lillooet rivers as well as the Tennasse and Lillooet lakes is granite, the course of the river runs from north-west to south-east, and the trend of the mountains from south-east to north-west. This belt of granite has been cross-cut in many places by dykes of eruptive rock, usually diorite, diabase, or varieties of serpentine. These dykes are generally of con-

siderable extent, and fissures sometimes of extraordinary thickness occur filled with quartz carrying iron pyrites, chalcopyrite and galena. In one instance, the writer found one of these ledges of mineralized quartz to be 700 feet in thickness, its dip almost vertical and strike north-westerly. The thickness was exposed by a cross-cut made by the waters of a glacier-stream.

All the creeks in this district, as well as the Lillooet river itself, are derived from glaciers, many of which occur within comparatively short distances from the mouth of the upper river.

The topography of the country is extremely rugged beyond the limits of the wide valley of the upper river. The mountains rise to altitudes of from 1,000 to 5,000 feet above the level of the valley. The sides, owing to snow and rock-slides, especially towards the summits, are extremely precipitous, and climbing is often dangerous on account of falling boulders.

Judging from trips made by the writer northward from the river, the belt of granite is about 4 or 5 miles wide on that side. Beyond, occurs a belt of diorite and other pyroxene-rocks, and beyond that metamorphosed argillites and schists.

During the season of 1897, a large number of prospectors worked in the country between Port Douglas and Tennasse lake, but very few continued their explorations beyond the foot of that lake. It was during this season, that discoveries of gold-bearing quartz were made on Fire mountain. This mountain rises west of Port Douglas, and the rich assays reported created quite an excitement, but failure to make sales by the locators, and lack of means to properly develop the claims caused an abatement of the excitement, so that during the present year but comparatively little work has been going on in the camp. The government, however, made an appropriation to build roadways, so as to enable mine-owners to take in machinery and supplies at a more moderate cost than heretofore.

The first stampede to Fire mountain was so early in the spring that several feet of snow covered the ground, but this did not hinder the prospectors from locating claims, and in a short time every foot of the mountain and contiguous territory was staked. Owing to this fact, the writer did not visit the mountains, but continued on up the river in order to reach virgin ground, which was found above the foot of Tennasse lake.

Along the shores of both Tennasse and Lillooet lakes there is but little evidence of the occurrence of ore, until the upper end of the

latter is reached, where occur some of the eruptive dykes to which the writer has already referred. The heavy iron-capping, so common in the Kootenay districts, is seen in some of these dykes, but so far no discoveries of quartz-ledges have been reported. The fact is that no prospecting has been done through the country tributary to either shore of the lakes. The rugged mountains are practically inaccessible, at present, except to prospectors who pack their outfits on their backs. No trails have been cut except along the northern shore, and granite is a very unpopular formation with the average prospector, especially in this northern territory, because most of them are old placer-miners, and more accustomed to work in slates and schists.

Towards the east, along the Fraser river, in the vicinity of Lillooet, the prospectors all seek free-milling quartz, and as most of them are old placer-miners, they have been year after year prospecting in the vicinity of the Fraser river to find, if possible, some of the ledges in which the placer-gold was originally deposited. The explorations from this section have, until 1897, been confined to the argillite-formation on Cayoosh creek, and the immediate vicinity of Lillooet. During that season, a stampede was started to Upper Bridge river, its southern fork, and Cadwallader creek, one of its tributaries, because of the remarkably rich specimens of quartz showing particles of free gold, some as large as grains of wheat, which were brought from there. Bridge river and its tributaries had for years past been favourably known, because of the placer-gold taken from them. The discovery of rich quartz in addition created a Klondike craze in miniature early in the present spring, and drew attention away from other sections.

Last year, the stampeders from the vicinity of Lillooet rushed pell-mell to the Blackwater creek, which is crossed on the Pemberton portage, where some very extensive ore-bodies had been discovered. The grade was low, and the ore carried so much copper, that treatment by smelting was necessary. Capital was slow to take hold of the camp, and it died a natural death, with location-stakes set up on every available foot of ground, whether containing ore or not.

Reference to the accompanying sketch-map (Plate XII.) will explain how the prospectors from the south-east, south, and south-west have gradually approached the Pemberton Meadows, also how those from the east and north-east have done the same. But still a vast expanse of country lying between the headwaters of the Bridge and Upper Lillooet rivers, as well as from the latter westward to the coast, is to-day virgin territory.

North of this district lies the section known as the Chilcotin country, because there the tribe of Indians bearing that name, the old enemies of the Douglas and Fraser River Indians, have their reservations, hunting and trapping-grounds. Of this section, nothing is known except to a few Indians, as not one white man in a thousand amongst the old placer-miners or prospectors has ever attempted to explore it. The Chilcotins tell of vast table-lands or plateaux where bunch-grass affords excellent summer-pasture for their ponies, and which are level for miles; and of the beautiful valley of Chilcoh lake and the game abounding within the limits of their country. They have a trail from Jack's Landing on Bridge river which they travel when they occasionally visit Lillooet and the Lower Fraser rivers on trading or pleasure excursions.

These Indians bring gold-dust to the traders, but where they find it is a secret that they will not divulge.

During the present season, prospectors have been busily at work on the southern fork of Bridge river and Cadwallader creek. By the trail followed from Lillooet, the distance to this territory is about 80 miles. The route runs up Seton lake 14 miles to the Indian mission; thence northerly across the divide, the summit being 3,000 feet above the lake, but only 1,500 feet above Jack's Landing on Bridge river, 8 miles distant by the trail. This point is about 40 miles above the mouth of the river. Below the channel is cut mostly through cañons, the fall being nearly 1,500 feet in 40 miles, and consequently the current is very swift, and too dangerous to attempt to navigate in canoes. Above, the river is sluggish, the fall being very slight, and only at one point do rapids occur. Canoes and boats can come down without the slightest danger, but as there are no Indian villages above the mouth, all the travel is along the trail, which has been cut along the northern bank.

The writer recently followed this trail, hoping by the aid of an Indian guide to be able to cross from the South Fork through the mountains to the head of the Lillooet river. But the timber was too dense to cut a trail through it, unless several axe-men were employed, and the work would have occupied more time than could be devoted to it during the present season.

Although several years ago, considerable placer-gold was taken from near the mouth of Bridge river, also from Tyanchon creek, a tributary emptying into it from the north about 55 miles above the mouth, as well as from near the mouth of the South Fork, yet very little indication of mineralization occurs on the portion of Bridge river travelled by our expedition until the vicinity of South Fork is reached.

The local prospectors have been talking of the "ash-beds" which occur through the country above the mouth of the Tyanchon creek, but these are merely derived from disintegrated and decomposed gneiss and schists in which felspar has formed a very large proportion of the rock. The surface for many miles, in every direction, is covered by this disintegrated material.

While a miniature Klondike fever has raged through this section during the present season, the actual development-work accomplished has been too limited to warrant any opinion as to the future of the camp. Some very rich specimens have been brought from narrow quartz-veins, varying from a few inches to about 4 feet in thickness. These were found at and near the surface, and led to the belief that the camp would produce free-milling ore in considerable quantity. The fact that as these veins are followed, the quartz becomes refractory, or partially so, is causing disappointment, and many prospectors had, at the time of the writer's visit, left the camp to seek free-milling quartz in other sections. Some prospectors have started north towards the Chilcotin country, because the Indian trails render it much more accessible than the country in other directions.

There is one feature regarding many mining-camps in British Columbia to which mining engineers should give due consideration, and thoroughly investigate before recommending development-mining. This is the fact that ground is too often staked, and recorded for mineral claims which has not the faintest shadow of right to be considered as such. This pernicious habit is followed in nearly every newly discovered camp. The writer has already referred to staking in snow on Fire mountain, and during his trip into Bridge river camp he found stakes and location-notices on ground where no indication whatever of the occurrence of ore exists. He was reliably informed of one instance where two men located twenty claims in one day. The posts were marked according to law, but no *bona fide* discoveries were made.

Unscrupulous promoters and agents for syndicates have fostered and encouraged this practice in order to represent in glowing terms in prospectuses that the property offered to the public embraced a certain number of claims in the vicinity of some mine which had acquired value through the persistent efforts of its owners to develop its resources properly and show ore in sight. Each property in British Columbia must be judged on its own merits. Near proximity to an established mine does not give a prospect any tangible value, unless actual develop-

ment has exposed its ore-body and a sufficient quantity of ore in sight has been determined. The section of the province which the writer has described in this paper is entirely new and its possibilities are unknown quantities. So far as *bonanzas* are concerned or even free-milling properties, it has not yet been demonstrated that any occur. If the extensive bodies of mineralized quartz carry even low-grade ores, they will pay to work on a large scale. They are so extensive that they may be developed into properties equally as valuable as the Homestake in Southern Dakota or the Alaska Treadwell and Alaska Mexican mines. In the writer's opinion, it will be through these ore-bodies that this district will be brought into prominence, rather than through those which are smaller though of apparently higher grade.

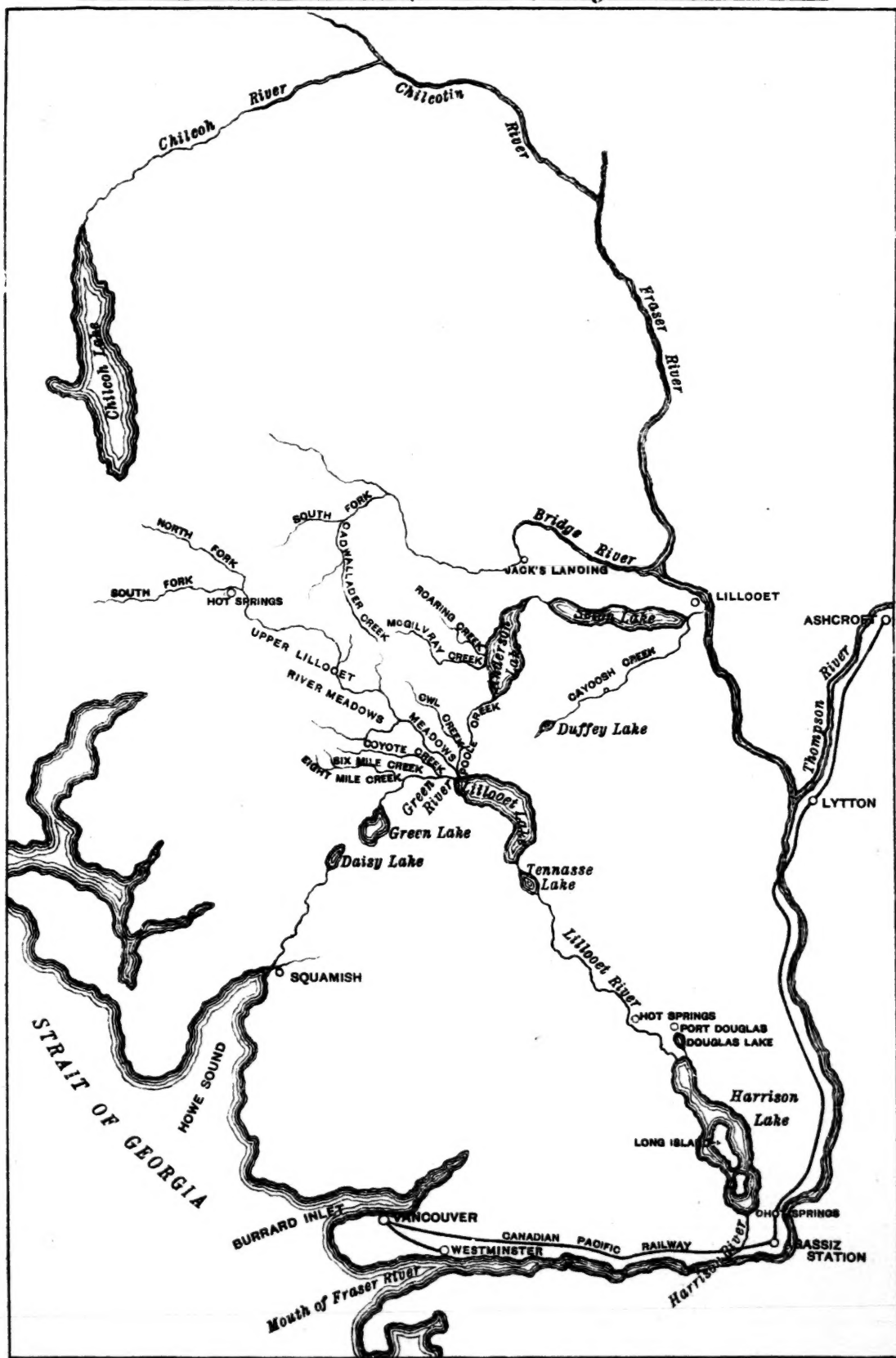
Water-power and timber are very plentiful throughout the territory described, and transportation is not very difficult or costly.

Large areas of well-watered agricultural land and natural pasturage in the Upper Lillooet valley, where irrigation is not necessary, as well as on the plateaux of the Chilcotin country, will eventually be improved and furnish to the miners, at reasonable cost, fresh meat, vegetables, hay, and grain. Whether the Chilcotin ranges and valleys will ever become a farming country, except so far as stock-raising is concerned, is a question for future solution, but if they should, then certainly this comparatively unknown region will develop into the granary of the province, whenever it is rendered more accessible by the building of roads connecting it with the coast.

A vote of thanks was passed to the author of the paper.



To illustrate Mr. W^m M. Brewer's Paper on "Prospecting in British Columbia."



SKETCH MAP
OF
SOUTH-WESTERN BRITISH COLUMBIA,
SHOWING THE
UPPER LILLOOET RIVER AND TRIBUTARY TERRITORY.